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Secretome of bovine amniotic and endometrial cells: application for in vitro embryo production.

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Abstract

Some maternal miRNAs are involved in early stage embryos [Abd El Naby, 2011]. Microvesicles (MVs) have been suggested as carrier of miRNAs for maternal-to-embryonic communication during the first days of early development [Mondou, 2012]. MVs, together with soluble factors, are components of conditioned media (CM) produced by cells during their culture. Aim of this study was to understand the role of CM, MVs and supernatant (SN, obtained from CM deprived of MVs) secreted by bovine endometrial and amnion cells on embryo development.

In vitro produced embryos were cultured in SOFaa alone (CTR) or supplemented on day 5 post-fertilization with 10% of endometrial or amniotic CM or SN or 100x106 MVs/ml.

The blastocyst rate obtained culturing embryos with amniotic CM and MVs was not significantly different from the CTR (34.17±3.29%, 32.82±3.26% and 35.45±2.53% respectively). The rate obtained by amniotic SN was 25.80±2.83% and statistically lower ($P<0.05$) than the other groups. The rate obtained by endometrial products were lower than CTR and the other conditions. The ICM of embryos cultured in medium supplemented with amniotic components had a higher number of cells than the CTR group: 30.4±1.83 and 29.42±1.27 for CM and MVs respectively compared to 27.6±1.44 for CTR ($P<0.05$).

Our data showed that exposing the embryos to the amniotic secretome does not improve the blastocyst rate, but increases their quality. The hypothesis is that miRNAs contained into MVs may contribute to the production of better quality embryos and that amniotic secretome supplies a more physiological environment for the embryo development.

References

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